IMAGE FOCUS

doi:10.1093/ehjci/jev040
Online publish-ahead-of-print 6 March 2015

Malcoaptation of the pulmonary valve diagnosed using transthoracic 3D echocardiography

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A 41-year-old woman with a history of type II diabetes, congestive heart failure, and pulmonary embolism was admitted for accidental burns on both her lower extremities due to severe peripheral neuropathy. During her hospitalization, a transthoracic echocardiogram (TTE) was ordered to evaluate a murmur heard on physical examination. The echocardiogram revealed a dilated cardiomyopathy with a left ventricular ejection fraction of 23%. The right ventricle was mildly hypokinetic. There was moderate mitral and tricuspid regurgitation and severe pulmonary regurgitation (PR).

Published 3D guidelines describe the acquisition of the pulmonary valve (PV) using only the transoesophageal approach. We have noted that, in patients with good-quality 2D imaging of PV, it is possible to acquire transthoracic 3D images of the PV from either the parasternal, the basal short-axis, or the subcostal short-axis transducer position (Panel A, left panel and see Supplementary data online, Video S1). In this patient, colour Doppler of the PV (Panel B, left panel) and pressure half-time (Panel C, left panel) revealed severe PR. Three-dimensional (systole, Panel D; diastole, Panel E; see Supplementary data online, Video S2) and colour full volume of the PV depicting the vena contracta area (Panel F, left panel) were acquired after centring the valve in the acquisition box with the help of biplane imaging. From this view, a 4-beat zoom acquisition was performed. Once acquired, the 3D volume dataset was rotated to display the PV as if viewed from the pulmonary artery with the anterior leaflet at the 12 o'clock position (right panel). In this patient, malcoaptation of a possible quadricuspid PV was clearly appreciated.

Supplementary data are available at *European Heart Journal – Cardiovascular Imaging* online.